(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 April 2001 (26.04.2001)

PCT

(10) International Publication Number
WO 01/28357 A2

(51) International Patent Classification[7]: A23L 1/00

(21) International Application Number: PCT/US00/28557

(22) International Filing Date: 13 October 2000 (13.10.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

09/418,452	15 October 1999 (15.10.1999)	US
09/419,123	15 October 1999 (15.10.1999)	US

(63) Related by continuation (CON) or continuation-in-part (CIP) to earlier applications:

US	09/418,452 (CON)
Filed on	15 October 1999 (15.10.1999)
US	09/419,123 (CON)
Filed on	15 October 1999 (15.10.1999)

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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— *Without international search report and to be republished upon receipt of that report.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 01/28357 A2

(54) Title: SUGAR SUBSTITUTES

(57) Abstract: It has been discovered that a particular combination of ingredients results in improved sweeteners having unique properties. By combining a traditional bulk sweetener with an intense sweetener, many of the prior existing limitations of sweeteners and sweetener substitutes may be overcome. The sweeteners of the present invention may be used directly in place of sucrose in existing recipes with few, if any, alterations. The sweeteners are non- or low-caloric and non-cariogenic and can be made from all-natural products. They provide exceptionally improved taste and consistency results. Advantageously, the sweetener can be formulated for use in recipes calling for sucrose with little adaptation. They are similar in sweetness to sucrose, with an untainted taste, and without delayed onset or persistence of sweetness. Their properties include the ability, among other things, to caramelize, tenderize, texturize, preserve, viscosify, brown and otherwise remain stable when heated.

SUGAR SUBSTITUTES

FIELD OF INVENTION

This invention relates to compositions and methods for making ingestible sugar substitutes, and more particularly, relates to sugar substitutes having unique and desirable properties.

BACKGROUND OF THE INVENTION

Sugar is one of the leading additives in prepared foods. Sugar not only acts as a sweetener, but it plays many additional roles in processed foods. Sugar may act as a texturizing or tenderizing agent in baked goods such as cakes and cookies. Because sugar possesses the ability to bind water, it can aid in retarding spoilage of products such as jams and syrups. Sugars can provide a variety of desired textures to candies, from crystalline, as in fudge, to non-crystalline, as in caramels. Sugars are also useful for enhancing flavors and preserving cured meats, as well as providing food for fermenting microorganisms in the preparation of breads, pickles, and alcoholic beverages. Of great importance, is the use of sugar to provide bulk in recipes.

"Sugar" is a broad term for carbohydrates that vary in degree of sweetness. Carbohydrates, or saccharides, are polyhydroxy aldehydes or ketones, most having the general empirical formula $(CH_2O)_n$. Families of carbohydrates are distinguished by the number of carbon atoms in the basic molecule, and the stereochemical configuration of the hydrogen and oxygen atoms within the molecule.

Carbohydrates are classified into three main groups: monosaccharides, disaccharides, and polysaccharides. Glucose (dextrose), fructose (levulose) and galactose are examples of hexoses, one form of monosaccharide. Disaccharides are made up of combinations of two monosaccharides and include sucrose (table sugar), maltose and lactose. Polysaccharides are also known as complex carbohydrates and are made up of multiple monosaccharides. They may be linear or branched. Examples include starches, fiber and glycogen. Sugar alcohols

are hydrogenation products of sugars and are also used as sweeteners in prepared foods. Common sugar alcohols include sorbitol, mannitol, lactitol and xylitol.

Certain health risks have routinely been associated with sugar intake. Insulin dependent diabetes mellitus is a chronic condition resulting from the absolute or relative absence of the endocrine hormone insulin. Under these conditions, the body is unable to maintain normal control of carbohydrate metabolism. The traditional treatment for patients with diabetes has included prohibition of dietary sucrose. Dietary sugar is also the major factor leading to dental caries. Dental caries is a pathological process of localized destruction of tooth tissues by microorganisms, which can be greatly reduced by elimination of sucrose. Another condition, obesity, is known to increase the risk of developing diabetes mellitus and hypertension and can lead to mortality. Gallbladder disease, degenerative joint disease and atherosclerosis have also been linked to obesity. Although our current understanding of obesity is incomplete, it is generally seen as a disorder of energy balance. Whether the obese have decreased energy utilization or an inappropriate intake of energy, it is commonly held that certain traditional carbohydrate sweeteners may be reduced or replaced in an effort to limit caloric intake for the management of obesity.

Furthermore, with the recent and increased popularity of fat-reduced and fat-free foods, the intake of dietary sugars has increased dramatically because the fats are replaced by sugars in processed foods. Ironically, many of the traditional fats that were present in prepared foods were less fattening than the sugars and carbohydrates that replaced them.

High glycemic sugars are also associated with problems in immune function. Cancer cells thrive on high glycemic sugars, which can also disrupt the Krebs Cycle and suppress antibody function. High glycemic sugars are also associated with the depletion of B-vitamins and the neurotransmitter dopamine.

Because of the conditions associated with traditional carbohydrate sweeteners, manufacturers have routinely begun to experiment with the use of many different kinds of alternate sweeteners in prepared foods. A number of intense, non-caloric sweeteners have begun to replace the traditional carbohydrate sweeteners. Examples of those having already received regulatory approval in the United States include, saccharin, aspartame and acesulfame potassium. Each compound has particular drawbacks. Aspartame is currently the most widely used, however, it is often unstable under conditions of prolonged heat and may break down to diketopiperazine. Saccharin has been widely studied and has been found

to be a carcinogen in animals and a potential carcinogen in humans. Acesulfame potassium has been approved only for specific limited uses. Other intense sweeteners are also being investigated for potential use as sugar substitutes. Among those are cyclamate, alitame, and neotame. As a class, intense sweeteners routinely have inferior flavor, such as bitter, metallic and persistent sensations. Many of them are acid or heat labile, or are otherwise unstable. Other compounds exist, such as licorice and licorice derivatives, which have been investigated as sweeteners and flavor enhancers, including their use as synergists when combined with sucrose.

The customary approach to the use of high intensity sweeteners has been to add the appropriate amount of the sweetener with further addition of other ingredients to achieve the proper consistency. For example, polydextrose, cellulose, carageenan and xanthan are routinely used to provide bulk in conjunction with intense sweeteners such as aspartame, alitame, saccharin and cyclamate. However, the result is dissimilar from that achieved with the use of sucrose and does not allow for direct substitution in existing recipes. Certain combinations of high intensity sweeteners have been useful for reducing the bitterness and aftertaste effects associated with that class of sweeteners. See, for example, U.S. Patent Nos. 4,495,170 and 4,536,396. For the most part, there has been no suitable substitute for sucrose developed because the conventional approach has been to add ingredients separately according to taste and consistency rather than as a single unit for use as a direct substitute. See, for example, European Patent 472,500 B1.

Because traditional carbohydrate sweeteners provide a number of functional and technical effects in addition to providing sweetness, replacement with other types of sweeteners often proves difficult and requires the addition of other ingredients to achieve a similar effect. For example, intense sweeteners are used in relatively small amounts because of their powerful sweetening effect. As such, they do not provide nearly the same bulk that sucrose affords. This makes their substitution into existing recipes difficult or impossible without complete reformulation. Furthermore, the substitution of sucrose with non-traditional sweeteners and the necessary additional ingredients often results in a less than satisfying taste and problematic consistency.

Traditional carbohydrate sweeteners also have shortcomings when used as a substitute for sucrose. Many are not non-caloric and do not provide the same sweetness sensation or duration as does sucrose. Other bulking agents, provide no sweetness

whatsoever. Many bulking sweeteners lack other characteristics of sucrose, such as dextrose and inulin, which are incapable of complete dissolution. Certain carbohydrate sweeteners have been used in combination with intense sweeteners. However, the intense sweeteners used were either synthetic or chemically extracted, and lacked the taste properties to result in a product that could be used as a direct substitution for sucrose, instead requiring adjustment of existing recipes. See, for example, European Patent 681,789 A1.

Thus, there remains a need for a safe, non-cariogenic, low or non-caloric sweetener. Advantageously, the sweetener could be formulated for use in recipes calling for sucrose while requiring little or no adaptation. The ideal sweetener should be similar in sweetness to sucrose, with an untainted taste, and without delayed onset or persistence of sweetness. Furthermore, the ideal sweetener would have properties similar to those of sucrose, including the ability, among other things, to caramelize, tenderize, preserve, viscosify, brown and remain stable when heated.

SUMMARY OF THE INVENTION

It has been discovered that a particular combination of ingredients results in improved sweeteners having unique properties. By combining a traditional bulk sweetener with an intense sweetener, many of the prior existing limitations of sweeteners and sweetener substitutes may be overcome. The sweeteners of the present invention may be used directly in place of sucrose in existing recipes with few, if any, alterations. The sweeteners are non- or low-caloric and non-cariogenic. They provide exceptionally improved taste and consistency results.

DESCRIPTION OF THE INVENTION

The present compositions provide for a sweetening component that imparts certain reactive functions and characteristics that are possessed by the traditional carbohydrate sweeteners, but not by the intense sweeteners. Those characteristics include, but are not limited to, preservative effects, stabilization, use as a carrier, acceptable mouth feel, and Maillard (browning) reaction. Other characteristics include use in bulking, thickening, viscosifying, caramelizing and caking. Also included, are the important characteristics of

intensity, duration and quality of sweetness. The compositions employ particular combinations of an intense sweetener and a traditional bulk sweetener chosen such that the resulting sweetener may be used as a direct substitute for sucrose, having an indistinguishable taste as well as possessing the same reactive properties, thereby enabling direct substitution into existing recipes calling for sucrose.

Lo Han Kuo (also known as Luo Han Guo, or rakanka) is the fruit from the plant *Momordica grosvenori* (also known as *Thladiantha grosvenori, Siraitia grosvenorii,* or Cucurbitaceae fruit), native to southern China. The fruits have traditionally been used by the Chinese in household remedies for colds, sore throats, stomach problems, and the like. Used by itself, Lo Han Kuo can possess a licorice-like aftertaste, similar to that of stevioside, although much more mild. Lo Han Kuo (HerbaSway, Wallingford, CT) is naturally derived and is several hundred times sweeter than sucrose. It has been determined to contain a triterpenoid moiety and several glucose units. It is believed that the presence of the triterpene glycosides, known as mogrosides and siamenosides, impart the intensely sweet sensation. The dried Lo Han Kuo fruit may be used whole, as extracts, or in powdered or block form. Although Lo Han Kuo is most preferred because of its superior flavor and because it is naturally derived, other triterpene derivatives from plants may be employed. Examplary plants include, but are not limited to *S. africana, S. borneensis, S. siamensis, S. sikkimensis, S. silomaradjae, and S. taiwaniana.* Licorice derivatives from *Glycyrrhiza glabra, G. hersuta, and G.uralensi* may also be useful, as is hernandulcin, a sesquiterpene derived from *Lippia dulcis.*

Compounds containing diterpene glycosides may also be used as the intense sweetener. Such compounds may be derived, for example, from the leaves of *Stevia rebaudiana*, and include steviolbioside, stevioside, rebaudioside (types A, B, C, D, and E), and dulcoside. Other diterpene glycosides include steviolmonoside and ruboside, for example. Additional compounds which may be incorporated into the compositions of the present invention include, but are not limited to proteins such as thaumatin derived from the fruit of *Thaumatococcus daniellii,* monellin derived from the fruit of *Dioscoreophyllum cumminsii,* brazzein derived from *Peneadiplandra brazzeana*, mabinlin derived from *Capparis masaikai,* as well as other plant extracts such as kiwi (*Trutina Dulcem).* Other high intensity sweeteners may also be employed. Most preferred for superior taste are

sucralose (Johnson & Johnson, New Brunswick, NJ) and neotame (Monsanto, St. Louis, MO).

The amount of the high intensity sweetener will vary depending upon the relative sweetness that it possesses. Based upon the values known for each compound, any person having ordinary skill in the art could easily make adjustments so that the resulting composition is nearly identical in taste to sucrose. Naturally derived sweeteners are most preferred.

Bulk sweeteners useful for the present invention include carbohydrates, such as mono-, di- and polysaccharides. Most preferred is rhamnose (Maypro Industries, Purchase, NY) because it is non-caloric. However, trehalose (Hayashibara U.S.A., Inc., Amarillo, TX) is also preferred because it can be used in proportions that allow for direct substitution of the final product for sugar. These carbohydrates possess exceptionally clean taste, heat stability, and ability to directly replace sugar in recipes without reformulation. Other carbohydrates include, but are not limited to inulin, maltose, glucose, galactose, mannose, fructose, dextrose, neosugar and sugar alcohols, including, for example, erythritol, mannitol, sorbitol and xylitol. The carbohydrates may be either naturally or synthetically derived. However, not all of the carbohydrates possess the range of reactive qualities found in sucrose, rhamnose, and trehalose. The appropriate amounts of the bulking agents will result in a final composition that may be used exactly as sucrose would be used. Any person having ordinary skill in the art can easily determine the appropriate amounts.

Other sweeteners that may be used instead of, or in addition to, the aforementioned high intensity sweeteners include nitroanilines, trihalogenated benzamides, amino acids, dipeptides (ie., aspartame), dihydrochalcones, flavonoids, isocoumarins (ie., amacha, phyllodulcin), sulfamates (ie., sodium cyclamate), oximes, saccharins, acesulfames, urea derivatives (ie.. dulcin), sesquiterpenes (ie., hernadulcin), and steroid saponins. The appropriate amounts of each particular compound can be determined according to the desired sweetness properties of the remaining ingredients used for the resulting composition. These values may easily be determined by any person having ordinary skill in the art.

The sweeteners of the invention may be used in edible products intended to be consumed and digested, as well as in products such as chewing gums, chewing compositions, smoking compositions, and oral hygiene compositions, which may or may not be swallowed.

The edible product may be a food (including a pet or avian food), a beverage or a pharmaceutical product. The products may or may not have a nutritional value.

Chewing gums may include, but are not limited to chicle or substitutes therefore, jetulong, guttakay rubber, or other natural or synthetic resins or waxes. Chewing compositions may include, but are not limited to chewing tobacco, smokeless tobacco, snuff, and other compositions which are generally masticated and periodically expectorated. Smoking compositions may include, but are not limited to all types of cigarette, cigar and pipe tobacco, including tobacco substitutes. Oral hygiene compositions may include, but are not limited to mouthwashes, mouth rinses, toothpastes, tooth whiteners and bleaches, tooth polishes, dentifrices, mouth sprays and mouth refreshers.

Food materials may include, but are not limited to confections, candies, icings, puddings, custards, baked goods, batters, frozen foods, cereals, vegetables, fruits, spices, condiments, soups, stews, sauces, cocoa products, chocolate products, animal feed and the like. Beverages may include, but are not limited to coffees, teas, herbal teas, carbonated and non-carbonated types, dairy products, fruit drinks, beers, lagers, pilsners, ales, stouts, wines, champagnes and the like. Pharmaceutical products may include, but are not limited to solids, gases and liquids including cough syrups, cough drops, medicinal sprays, vitamins, lozenges, herbal remedies and the like.

Other additives may be useful and will be apparent to any person having average skill within the art. These may include, for example, flavorings, colorings, natural and/or artificial preservatives, vitamins, minerals and excipients such as corn starch, silica, or oils, for example.

Especially useful is vinegar toner powder (VTP). VTP (FlavTek, Los Angeles, CA) is traditionally used to mask the flavor of vinegar where the vinegar is used in high quantities as a preservative, for example, in all natural salad dressings. In the present invention, the VTP is surprisingly useful for mitigating the slightly bitter taste associated with the carbohydrates that are less sweet than sucrose. It also helps to eliminate the slight licorice aftertaste associated with some of the intense sweeteners. Finally, it helps to merge the flavor of the two types of sweetener and make the resulting composition very similar to sucrose.

Other masking compounds exist, such as miraculin, curculin, artichoke extract, apple extract, kiwi extract and blue agava , that are not used as sweeteners *per se*, but used

similarly to vinegar toner powder in order to alter the perceived taste of certain foods so that they seem sweeter or less bitter. Miraculin is the fruit of the shrub *Synsepalum dulcificum.*. Curculin is derived from *Curculigo latifolia.* Blue agava is extracted from the plant *Agave Tequilana weber* and is routinely used in the production of tequila beverages.

The masking agents may optionally be included with the high intensity sweetener and bulking agent combination as needed. For example, compositions prepared with neotame or sucralose may require little to none of the masking agent as compared to those compositions prepared with Lo Han Kuo.

The compositions of the present invention may be used in place of sucrose in recipes. Additionally, the composition may be placed in a blender in order to produce powdered sugar. If the bulk sweetener is more crystalline than the intense sweetener, it can be treated in a blender before combining such that the two sweeteners are similar in texture, which prevents settling and separation after blending. The compositions may also be prepared as a liquid and may include optional preservatives.

The present invention is illustrated by the following examples that are not intended to limit the effective scope of the claims. The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications are intended to be included within the scope of the claims.

EXAMPLE 1

A substitute for sucrose was prepared as follows:

994.0	Rhamnose
4.0	Lo Han Kuo
2.0	Vinegar Toner Powder

EXAMPLE 2

A substitute for sucrose was prepared as follows:

199.0	Trehalose
0.8	Lo Han Kuo
0.2	Vinegar Toner Powder

EXAMPLE 3

A substitute for sucrose was prepared as follows:

994.0 Rhamnose
5.0 Sucralose

EXAMPLE 4

A substitute for sucrose was prepared as follows:

199.4 Trehalose
0.6 Sucralose

EXAMPLE 5

Lemon bars were prepared as follows:

Base

1 ½ sticks of unsalted butter
2 cups all purpose flour
½ cup sugar substitute as prepared in Example 4
½ teaspoon salt

Topping

4 large eggs
1 ½ cups sugar substitute as prepared in Example 1
¾ cup fresh lemon juice
1 tablespoon lemon zest

Finale

3 tablespoons sugar substitute as prepared in Example 4

The butter was cut into ½ inch pieces. In a food processor, all base ingredients were processed until the mixture began to form small lumps. The mixture was sprinkled into a 13"x9"x2" baking pan and was pressed evenly onto the bottom with a metal spatula. The pan was placed in the center of the oven and baked at 350°F for about 20 minutes, during which time the topping was prepared as follows. The eggs and sugar were combined in a bowl and whisked until mixed well. The lemon juice, zest and flour were added. This mixture was poured over the hot base when it was done baking. The pan was returned to the oven, with the oven temperature reduced to 300°F, and baked in the middle of the oven until

set (about 30 minutes). After baking, the pan was cooled completely and the remaining finale of substitute sugar was sprinkled on top of the baked lemon bars.

EXAMPLE 6

Chocolate truffle cake was prepared as follows:

8 ounces unsweetened chocolate squares
¼ cup water
1 ½ sticks unsalted butter, softened
½ cup sugar substitute as prepared in Example 1
1 tablespoon cornstarch
4 large eggs, separated, at room temperature
¼ teaspoon salt

1. The bottom of an 8" springform pan was greased.
2. The chocolate was melted with the water in a small, heavy saucepan over very low heat, while stirring occasionally until the mixture was smooth. Then it was removed from the heat and set aside.
3. The butter, sugar substitute and cornstarch were placed in a mixing bowl and whipped with a wire whisk until blended. Then the egg yolks were added and whisked until blended, but not beaten. The chocolate mixture was added and also blended.
4. In a separate bowl, the egg whites were beaten with the salt until stiff, but still moist. About ¼ of the egg white mixture was added to the chocolate mixture to lighten it. The remainder of the egg white mixture was then also whisked into the chocolate mixture, using a light folding action.
5. The batter was poured into the prepared pan, and was shaken slightly to settle the batter. The pan was placed in the center of the oven and baked at 350°F for 15 minutes. The oven heat was turned off and the oven door was left slightly open so as to allow the cake to cool for 10 minutes.
6. The cake was then removed from the oven and placed on a wire rack to cool. As the cake began to draw away from the sides of the pan, a knife was run around the edge so as to facilitate later removal.

EXAMPLE 7

Cornmeal waffles were prepared as follows:

1 ¼ cups all- purpose flour
2 TBS sugar substitute as prepared in Example 1
2 tsp baking powder
¾ tsp salt
3 eggs, separated
1 ¾ cups milk
6 TBS melted lard or margarine
1 tsp chili powder
1 tsp garlic powder
½ tsp pepper seasoning
¼ tsp ENVISION® (lactisol)

1. Mix the dry ingredients together and set aside.
2. Beat the egg yolks.
3. Add milk and lard.
4. Stir in the flour mixture until just moistened. Do not heat.
5. Beat the egg whites until they hold firm peaks, then fold into batter.
6. Bake in a waffle iron.

EXAMPLE 8

Poppy Seed Dressing was prepared as follows:

¼ cup sugar substitute as prepared in Example 2
¼ TBS dry Dijon mustard
2/3 cup white vinegar
½ tsp salt
2 TBS grated onion plus juice
2 cups vegetable oil
3 TBS poppy seeds
¼ tsp xanthan gum

Mix all ingredients

EXAMPLE 9

Chocolate Macaroons were prepared as follows:

½ cup sugar substitute as prepared in Example 3
2 TBS unsweetened cocoa powder
2 large egg whites at room temperature
1/8 tsp salt
½ tsp vanilla
¾ cup finely flaked coconut
semisweet chocolate coating
1/8 tsp cream of tartar

1. Preheat oven to 275 degrees, setting two racks just above and just below the center.
2. Put the sugar substitute and cocoa through a sieve into a small bowl, stir to blend and set aside.
3. Beat egg whites until foamy. Add salt and cream of tartar. Continue to beat until the egg whites are stiff but not dry. Add vanilla at the end.
4. Fold in the cocoa mixture in 4 or 5 additions, sprinkling each over the top but not blending completely before the next. With the last addition, the mixture should be completely blended. Fold in the coconut.
5. Drop the mixture by heaping teaspoonfuls onto ungreased baking sheets 1 ½ to 2 inches apart.
6. Bake ~30 minutes, or until they feel dry to the touch and the bottoms are baked and glazed. Immediately remove with a spatula and cool.
7. Coat with melted chocolate.

EXAMPLE 10

Cookies were prepared as follows:

1 cup white Riesling wine
4 ½ cups white flour
½ tsp coriander
¼ tsp mace
1/16 tsp allspice
¾ tsp salt
1 tsp baking powder
2/3 cup light corn syrup
1/3 cup honey
1 cup sugar substitute as prepared in Example 2
¾ cup butter

1. Boil wine until reduced to 1/3 cup and cool.
2. Sift together flour, baking powder, salt and spices; set aside.
3. Place corn syrup, honey, sugar and butter in a saucepan and heat until melted.
4. Remove from heat and stir in flour mixture and wine.
5. Roll into small marble size and place on greased cookie sheet. Press flat using meat tenderizer dipped in flour. They should be very thin, about 1/16 inch.
6. Bake at 375 degrees for 5 minutes

EXAMPLE 11

Five-way Chili was prepared as follows:

5 pounds course ground beef
3 quarts water
½ cup plus 1 TBS tomato paste
1 TBS onion granules
1/8 cup salt
1/8 cup sugar substitute as prepared in Example 1
1/8 cup vinegar
2 TBS garlic granules
2 TBS beef stock base
¼ tsp black pepper

Cook for 9 hours and then add:

1/8 cup cinnamon
1 TBS dry unsweetened chocolate
½ TBS cayenne pepper
1 TBS ground oregano
1 TBS ground cardamon
1 TBS ground coriander
¾ tsp ground cumin
¾ tsp ground cloves
½ tsp ground thyme
½ tsp ground tarragon
½ tsp ground allspice

Cook an additional hour and serve over pasta.
Optionally top with onions, cheese and/or beans.

EXAMPLE 12

A date shake was prepared as follows:

40.0 g sugar substitute as prepared in Example 3
45.0 g non-fat dry milk
35.0 g dry milk
20.0 g dry buttermilk
0.20 g vanilla
0.40 g orange flavor
0.05 g titanium dioxide
0.20 g xanthan gum
0.20 g salt
45.0 g dry date bits

Shear in blender
Reconstitute with 40 grams of dry to 8 ounces of water or milk

What is claimed is:

1. A sucrose substitute composition comprising at least one intense sweetener in combination with at least one carbohydrate bulk sweetener in proportions such that the composition is configured to be essentially directly substituted for sucrose in recipes.

2. The composition of claim 1 wherein the intense sweetener is selected from the group consisting of triterpenes, sucralose, neotame and combinations thereof.

3. The composition of claims 1 or 2 wherein the carbohydrate bulking agent is selected from the group consisting of rhamnose, tagatose and trehalose and combinations thereof.

4. A sucrose substitute comprising at least one intense sweetener, at least one carbohydrate bulk sweetener and at least one masking agent, in proportions such that the composition is configured to be essentially directly substituted for sucrose in existing recipes.

5. The composition of claim 4 wherein the high intense sweetener is selected from the group consisting of triterpenes, sucralose, neotame and combinations thereof.

6. The composition of claim 4 wherein the carbohydrate bulk sweetener is selected from the group consisting of rhamnose, tagatose and trehalose and combinations thereof.

7. The composition of claims 4, 5 or 6 wherein the masking agent is selected from the group consisting of vinegar toner powder, blue agava, miraculin and combinations thereof.

8. The composition of claim 1 comprising rhamnose and Lo Han Kuo.

9. The composition of claim 1 comprising rhamnose and sucralose.

10. The composition of claim 1 comprising rhamnose and neotame.

11. The composition of claim 1 comprising trehalose and Lo Han Kuo.

12. The composition of claim 1 comprising trehalose and sucralose.

13. The composition of claim 1 comprising trehalose and neotame.

14. The composition of claim 1 comprising tagatose and Lo Han Kuo.

15. The composition of claim 1 comprising tagatose and sucralose.

16. The composition of claim 1 comprising tagatose and neotame.

17. The composition of any of claims 8-16 further comprising vinegar toner powder.

18. The composition of any of claims 8-16 further comprising blue agava.

19. The composition of any of claims 8-16 further comprising miraculin.

20. A method of making ingestible products calling for sucrose comprising the step of wholly or partially substituting sucrose.

21. A method of making ingestible products calling for sucrose comprising the step of wholly or partially substituting sucrose.

22. The method of claim 20 wherein the composition is pre-mixed.

23. The method of claim 21 wherein the composition is pre-mixed.

24. The method of claim 22 wherein the composition is liquid.

25. The method of claim 23 wherein the composition is liquid.

26. A method of making ingestible products comprising the step of including of the composition of claims 1 or 4.

27. The method of claims 21 or 21 wherein sucrose is substituted with the composition of claim 1 in a proportion of about 1:1.

28. The composition of claims 2 or 5 wherein at least one triterpene is Lo Han Kuo.

29. An ingestible food product comprising a sweetener comprising at least one intense sweetener in combination with at least one carbohydrate bulk sweetener, in proportions such that the composition is configured to be essentially directly substituted for sucrose in recipes.

30. An ingestible food product comprising a sweetener comprising at least one intense sweetener, at least one carbohydrate bulk sweetener and at least one masking agent, in proportions such that the composition is configured to be essentially directly substituted for sucrose in recipes.

31. The ingestible food product of claim 1 or 4 wherein the sweetener is configured to caramelize when heated.

32. The ingestible food product of claim 1 or 4 wherein the sweetener is configured to tenderize foods.

33. The ingestible food product of claim 1 or 4 wherein the sweetener is configured to act as a preservative.

34. The ingestible food product of claim 1 or 4 wherein the sweetener is configured to act as a viscosifier.

35. The ingestible food product of claim 1 or 4 wherein the sweetener is configured to provide a Maillard reaction when heated.

36. The ingestible food product of claim 1 or 4 wherein the sweetener is configured to remain stable when heated.